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ABSTRACT

Three years ago Brigham Young University in Provo, UT began offering a required two-credit pass-fail course to prepare industrial education teachers to teach reading in their field. The course is team taught by a reading teacher and an industrial education faculty member who had done his/her dissertation in reading. Addressed in the course are the following topics: attitudes toward reading, reading diagnosis, readability, vocabulary, comprehension, motivation, English as a Second Language (ESL), and study skills. Over time, several changes have been implemented in the course. These include providing a student teaching experience prior to the course, thereby providing background that assists later learning. At the conclusion of the reading course, the students begin another month-by-month student teaching experience, during which they are evaluated with respect to 15 teaching behaviors in reading. After this second student teaching experience, reading is followed up at a summary interview, and a paper is written on the teaching of reading within a school industrial education curriculum. While the instructors of this course have, at times, found their teaching experience to be frustrating, they feel that the course has been a success. (MN)

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PREPARING INDUSTRIAL EDUCATION TEACHERS AS READING SPECIALISTS

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Preparing Industrial Education Teachers as Reading Specialists

Recent reading research gives new emphasis to the industrial education instructor as a teacher of reading. Studies by Mickulecky (1982) and Sticht (1975) demonstrate clear differences between reading in the workplace and reading in school. Reading "to do", typical of industrial education is unlike most reading "to learn" in most school-type subjects. In addition, reports from industry and the military indicate growing concern about the inability of workers to meet the literacy demands of their jobs. One business executive reports (Hymowitz, 1981) that poorly educated workers are the number one problem slowing growth. His company, ILG Industries, reports expenditures of over one million dollars to correct worker literacy mistakes. Similarly, safety concerns over workers not being able to read warnings and follow written directions have been issues in court cases and caused several firings at a Westinghouse plant in California. The military also reports damage to equipment in the hundreds of thousands of dollars by soldiers who could not read instructions.

Several surveys (Hunter and Harman, 1979) in the last decade have highlighted this problem of functional illiteracy in the U.S. population. Estimates vary according to the study, but it seems clear that reading problems in the workplace are taking a heavy toll for both individuals and the economy. One study (Northcutt, 1975) places the number of adults who read with difficulty at 57 million. It is projected (Guthrie, 1982) that industry in the U.S. will spend 32 million dollars in 1982 to educate its employees, much of it on basic skills. Trends further suggest

that future literacy demands of jobs will become more intense. Blue collar workers will need to read directions, keep up with technological change, and retrain by reading more than ever before.

Implications for workplace reading and the industrial education teacher are many. Mickulecky (1979) states that this teacher may be in the best position to bridge the gap between literacy in the schoolroom and the world of work.

In this context, a required 2 credit pass-fail course has been offered to prepare industrial education teachers to teach reading in their field. The course was team taught by a reading teacher and an industrial education faculty member who had done his dissertation in reading. It is offered during the fall semester in a classroom adjacent to a shop used on occassion in the course. The class represented the state reading requirement for all preservice secondary teachers and was integrated with the student teaching experience.

Like most classes the course has evolved over three years as the instructors gained experience in a team teaching setting. This article is a description of the experience of the instructors and course content by topic as it has evolved since 1979.

Attitudes, models, diagnosis and readability

As expected, students came with negative attitudes about a required, nongraded reading course and its relevancy to their field. To motivate students, examples of the diversity of reading in the field were presented: schematics, drawings, technical directions, charts, building codes, etc. Although mainstreaming was mentioned, students were

reassured they would not be teaching phonics or learning disability students. A tape from a former student in the course who had become converted to teaching reading skills after graduation and a statement from an authority in industrial education (Feirer, 1976) were presented emphasizing teacher responsibility for reading. Mention was made of reading questions in employment interviews by local school districts. However, despite what the instructors thought was a good beginning, student attitudes remained negative about the need for the course and the time required for the seminar.

Substantial change in these student attitudes did not occur until 1982. At that time, students were given an initial one month student teaching experience in the high schools, then brought back to campus for the reading course and other classes. Since all the students had been exposed to reading skills problems in industrial education settings, there was little further problem with attitudes and perceived relevancy. By contrast with former classes who had no student teaching experience, motivation and interest were greatly improved.

Following Conroy's statement (1979) that a motivated teacher is the most important ingredient in teaching industrial arts reading, focus was shifted to the personal reading habits of class members. The McGraw Hill Reading Test (Raygor, 1970) and an open ended reading survey were administered. Using the results, discussions were held on general reading, reading interests of the class, keeping current in the field (Goetsch et al., 1982) and specific discussions of what ought to be the reading habits of a good industrial education teacher. The non-academic image of industrial education was then discussed. An appeal was made (Ciani and Hogue, 1976) to change that image and

suggestions given of what could be done about it with respect to reading. Attention was given their role as an example to students, the enthusiasm with which they presented themselves as readers, and had balanced reading habits. Though not emphasized, some of the reasons given by Gentile (1977) of why high school students don't read, the practice of many industrial arts teachers of avoiding reading and making disciplinary reading assignments (Fischer, 1977; Walker, 1980) were mentioned. Additionally throughout the term, instructors made efforts to model the teaching practices they were encouraging the student to acquire.

Students were next asked what makes reading difficult. They were presented with the problem of how to select a text (Conroy, 1980) as a member of a school textbook committee. Using the Raygor readability estimate (1977) and the state industrial arts textbook selection criteria, they analyzed and discussed several textbooks. This led to a discussion of modifying poorly written materials, taping, glossing, preparing readable instructor made materials, etc. The importance of clear, simple writing was stressed, including handouts and tests. Following Luter (1977), assignments were given to rewrite some poorly written material identified in their secondary school texts.

From the readability topic, the class next considered diagnosing their students' reading skills. By assignment, they returned to the schools to obtain reading test scores for their students. Strengths and weaknesses of standardized tests were considered, the diversity of scores within each class was noted, and teaching implications discussed. Using a test from their school, an assignment was given to write a simple informal test to identify the very poor readers. Suprisingly,

this proved diffucult for most students. Problems centered in making the tests short and simple, something that could be quickly evaluated. In this topic, questions usually arose about test scores predetermining teacher behavior and attitudes. In discussion, the class looked at both sides of the problem. An assignment in the industrial arts literature (Derby, 1975) was then given.

Vocabulary, comprehension, motivation, ESL, and study skills

With a wealth of material available and a familiar topic, instructors were presented with a problem of what would hold interest and also achieve course objectives. After some experimenting, the following methods emerged as most successful. An initial homework assignment - a general vocabulary test - was given as an assignment to be taken with the help of a friend. When corrected in class, attention was given to why some students know certain words and others didn't. Then students were next asked to submit a word they thought no one else in the class knew. A few of these were selected and then the submitter was asked to teach the word after students had the opportunity to ask questions and guess its definition. As this was done, several teaching techniques emerged and principles of association, putting meaning in the framework of the learner's experience, demonstration, illustration, etc. were brought out. A contest based on word roots was held to create words. Also to create interest, a sheet giving the etymological meanings of each of the class member's names was distributed.

After this introductory material, unfamiliar tools were brought in from the shop and students asked to teach tool identification to the class. Reference was made to the learning principles previously

introduced, the usefulness of flashcards (Napier and Napier, 1982), glossaries (Paige, 1981), crossword puzzles (Kozak, 1981; Bartel, 1981; Conroy 1964), labeling (Conroy, 1980), and poster and display boards use (Conroy, 1979). Vocabulary teaching ideas previously observed in student teaching experience were discussed. A summary point stated that industrial education teachers, because of the resources in their field, ought to be the best vocabulary teachers in their schools.

Reading and writing directions were given major emphasis in the comprehension unit. To impress students with the subtle difficulties involved, a student extemporaneously was asked to give an instructor exact directions of how to put on a coat or tie a shoelace. Written puzzles with difficult and precise directions were also presented. The resultant humor, frustrations and errors became a platform for discussions of problems about the reading and writing of directions. The class then moved to the shop where students wrote directions for the safe operation of unfamiliar equipment. Then others used and critiqued those directions to judge their effectiveness and operate the equipment. Back in the classroom, summary statements, handouts and a reading assignment (Conroy, 1980) were given.

How to make a reading assignment (Struck, 1962) was next presented. Classes are first given a short quiz based on the previous day's reading assignment where only page numbers and a quiz had been announced. The quiz included questions on umimportant trivia that all students missed. The frustration and complaints that ensued introduced a discussion of positive ways to present a reading assignment following well known DRA approaches. Encouragement was given to introduce reading assignment by providing background information, relating the information to what

is known, providing guidelines for what in the reading important and following up with discussion after the assignment is completed.

The comprehension topic was concluded with a levels of meaning presentation. Using newspaper articles on industrial arts topics, the objective is to encourage teachers by their assignments, questions (Conroy, 1982) and quizzes to use higher reading and thinking comprehension skills (Bensen, 1967) when appropriate. A simple three level approach of fact, interpretation and application was presented. Students were assigned reading and asked to write questions in each of the three levels on current events industrial arts newspaper articles.

In considering motivation to read, attention was again called to the example that teachers should be in their personal reading practices. Teachers should not avoid reading which helps their students to be self-directed. When students don't read, teachers spend unnecessary time answering questions and repeating instructions. While we have found few prospective teachers who spend much time with Shakespeare or Chaucer, our surveys have found many who have admirable reading habits. Theimportance of their example as teachers again was stressed and their enthusiasm in recommending books, magazines, biographies, etc. in and out of their field was discussed.

Before one class, 30 popular current industrial arts magazines were placed on the chairs of students. As anticipated, five minutes into the class session, most of the students were engrossed in the magazines, paying no attention to the instructor. At this point, the class was stopped and attention called to what had happened. The value of readable popular literature to industrial education teenage students was introduced. An article by Arnoldsen (1982) was also

assigned on how to movitate reluctant readers. The value of a shop library, (Conroy, 1981) and working with the school librarian or media specialists was presented. Being knowledgeable about and having access to a variety of reading materials for student interests was considered. Follow-up assignments were given in the schools to look at high school libraries, talk with librarians, and prepare orders for industrial education materials.

Teaching the ethnically different student was introduced by a student with foreign language skills instructing the reading specialist on how to operate a machine. Since the reading specialist was both unfamiliar with the equipment and the language, a realistic teaching-learning situation ensued. Problems of communication, language difficulties, what can be done to help the ESL student in industrial arts, resources available in the schools, and problems or culture were brought out after that activity. Reading (Kuwik and Fitzgerald, 1980) was assigned and a South American graduate student in industrial education presented teaching recommendations about ESL students based on personal experiences.

More time than was available has been needed for this topic. Short reviews of memory and forgetting principles, some instruction on reading charts, diagrams, etc. and writing special project papers was presented. An objective of this unit is to *integrate* reading and study skills into the regular instruction in the industrial education curriculum. Avoidance of isolated instruction in these skills was stressed on repeated occasions. For example, note taking should be taught when notes are necessary to some other real learning task. Reference was also made to why the English or reading teachers

shouldn't be given the responsibility for teaching reading skills in industrial arts. Reading is also assigned (Levine, 1960) to reinforce the point that the industrial education teachers are the best reading specialists in their own fields. No one else can do it as well as they can.

Conclusion

A continuing effort has been how to get the concepts presented in the teacher training classroom into the actual teaching behaviors of the students. Over time, changes in the course have encouraged this. This includes placing a student teaching experience prior to the course, providing background that assists later learning. At the class conclusion, the students begin another month long student teaching experience where they are expected to implement course content. Fifteen teaching behaviors in reading were specified and evaluated by supervising teachers. Supervising teachers who observe the student teachers were previously oriented to the reading assignments by letter and at a free dinner meeting on compus. After this second student teaching experience, reading is followed up at a summary interview and a paper is written on the teaching of reading within a school industrial education curriculum.

From the point of view of the instructors as the course has evolved, the teaching experiences have been both successful and at times frustrating. Teaching evaluations have pointed out strengths and weaknesses and helped establish priorities. Student suggestions have been helpful and some students are used in a teaching capacity. The instructors have learned much about each other's competencies and

gained new respect for the difficulties of team teaching. They find it useful to meet before and after each class period for planning and evaluation.

A full file drawer of teaching materials, handouts, etc., has developed and the course bibliography has grown from twenty to ninety references since 1979. Correspondence has been established with other interested educators and one convention paper has been presented. Grant funds have been available and administrative support obtained. Efforts are now directed at obtaining tapes and samples of good teaching practices in the field and further refining class instruction. A few publications are planned. However, more data based evaluations and research are needed. For example, it would be useful to survey the extent to which reading skills in industrial education are used, taught, or avoided in secondary schools, Little empirical research is available in the literature of either reading or industrial education. Despite this need for objective data, the course has sufficiently matured to produce a syllabus and be included in the regular curriculum. Student evaluations have substantially improved and the instructors are more comfortable with their efforts since the first offering in 1979.

Certainly a continuing need in the field exists. Many secondary school industrial education courses are in their instructional practices totally devoid of reading. Reading skills are neglected despite strong supportive statements by authorities in both reading and industrial arts. Hopefully colleges of education and industrial arts can cooperate, preparing teachers sensitive to reading skills and the literacy demands of their field. Wider acceptance of this function within the profession will place their teachers on the forefront

of literacy education. By so doing, they will become better teachers, earn the respect of colleagues, and better train students for the realities of the world of work.

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